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NOTES ON THE FLORA OF MARYLAND AND VIRGINIA,—II.

IVAR TIDESTROM.

FIVE species of poplars are listed for Maryland in a recent work.¹ In a booklet² covering a part of the Amentiferae (Salicaceae, Ceriferae, and Betulaceae) nine species were listed, of which five have been introduced and four are native. It is to be noted that Elysium Marianum purports to include Virginia also, but since all of the species are found within the limits of Maryland, the wide difference between the accounts of the poplars from the latter state should not be passed over without some explanation. The lists given in Plant Life of Maryland include the following species: *Populus alba*, *P. heterophylla*, *P. grandidentata*, *P. tremuloides*, and *P. dilatata*.

Populus alba is found escaped in many places throughout the region, as is also the closely related *P. canescens*. The two species are readily distinguished both by the flowers and the leaves. The following diagnoses are given of the staminate aments of the two species:

P. ALBA. Stam. aments fullgrown, 8–10 cm. long, 1.5 cm. in diameter: subtending floral bracts villous, rounded with a cuneate base; light brown, 6 mm. long (incl. the stipe), 3 mm. wide, laciniately cleft into 5 or more teeth: staminiferous disk (on a stalk 1 mm. long) elliptic, about 2 mm. long, 1.5 mm. wide: stamens about 8; anthers red, 0.7 mm. long: pollen-grains spherical, almost smooth.

P. CANESCENS. Stam. aments fullgrown, about 9 cm. long, 2 cm. in diameter: subtending floral bracts villous, rounded with a cuneate base, russet brown, 4 mm. broad, 7 mm. long (incl. the whitish stipe),

¹ Plant Life of Maryland, p. 422.

² Elysium Marianum 3: 11, 1910.

laciniately cleft into 5 or more teeth: staminiferous disk (on a stalk 2 mm. long) elliptic, about 3 mm. long, 2 mm. broad: stamens 12-16; anthers red, 1 mm. long: pollen-grains almost smooth, somewhat larger than in *P. alba*.

Comparing the descriptions we find several factors which do not agree, particularly the number of stamens. In general the floral parts in *P. canescens* exceed in size those of *P. alba*. Those who are in position to observe the two species in the same locality will soon learn to distinguish them in flower. The leaves of the young growth and root-shoots of *P. alba* are more or less deeply lobed, while in *P. canescens* they are merely toothed, or at the most shallowly lobed. Both are known to send out innumerable root-shoots.

Populus canescens should be included in the list of introduced trees that have become established in many places. I have not observed it in the North and specimens, collected in New England southward to Pennsylvania, belonging to the *P. alba* group, which have come to my notice, have invariably been *P. alba*.

POPULUS ALBA BOLLEANA. This handsome fastigate form is found in cultivation in our region, but not escaped so far as I have been able to ascertain. Its floral characters differ somewhat from those of *P. alba*. Stam. aments, fullgrown, about 6 cm. long, 1 cm. or less in diameter: subtending floral bracts villous, rounded with a cuneate stalk equalling the blade; the latter dark brown below, lighter brown towards the apex, cleft into 4 nearly equal teeth: staminiferous disk (on a stalk 1 mm. long) elliptic about 2 mm. long, 1.5 mm. wide: stamens 8; anthers red, 1 mm. long.

POPULUS GRANDIDENTATA. This species was first recorded from Canada by Michaux Sr., and the diagnosis by Richard reads:

“*P. petiolis superne compressis; foliis subrotundo-ovalibus, acuminatis, utrinque glabris, inaequaliter sinuato-grandi-dentatis.*

Obs. Affinis *P. albae*; foliis itidem quandoque basi biglandulosis. Hab. in Canada.” [L. C. Rich. in] Michx. Fl. Bor. Am. 2: 243, 1803.

Later Michaux Jr.¹ in his illustrated account of the trees of North America gives us additional information about it so as to leave us in no doubt as to its identity.

Prior to 1806 Muhlenberg communicated specimens (?) of a poplar

¹ Hist. des Arbres For. de l'Amér. Sept. 1812-13.

to Willdenow which he called *P. trepida*. The latter published it under that name in 1806.¹ His description is applicable to *P. grandidentata* and to no other. Moreover, Muhlenberg² later on refers *P. grandidentata* to *P. trepida*. This was discussed by the writer in the *American Midland Naturalist* 2: 13. 1911.

On July 5, while I was botanizing between Oakland and Thayerville, Garrett Co., Maryland, another poplar came to my notice.

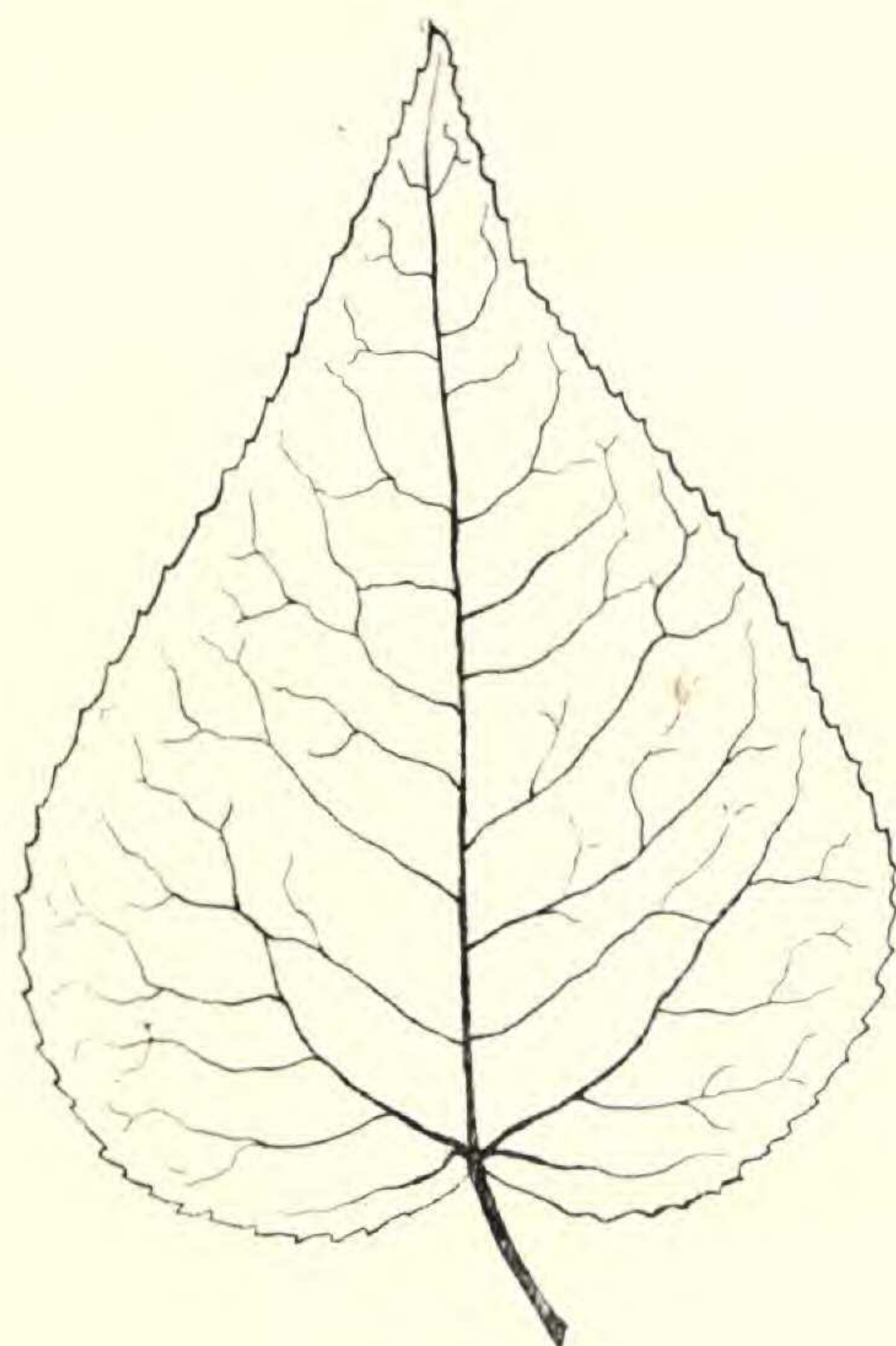


Fig. 2.

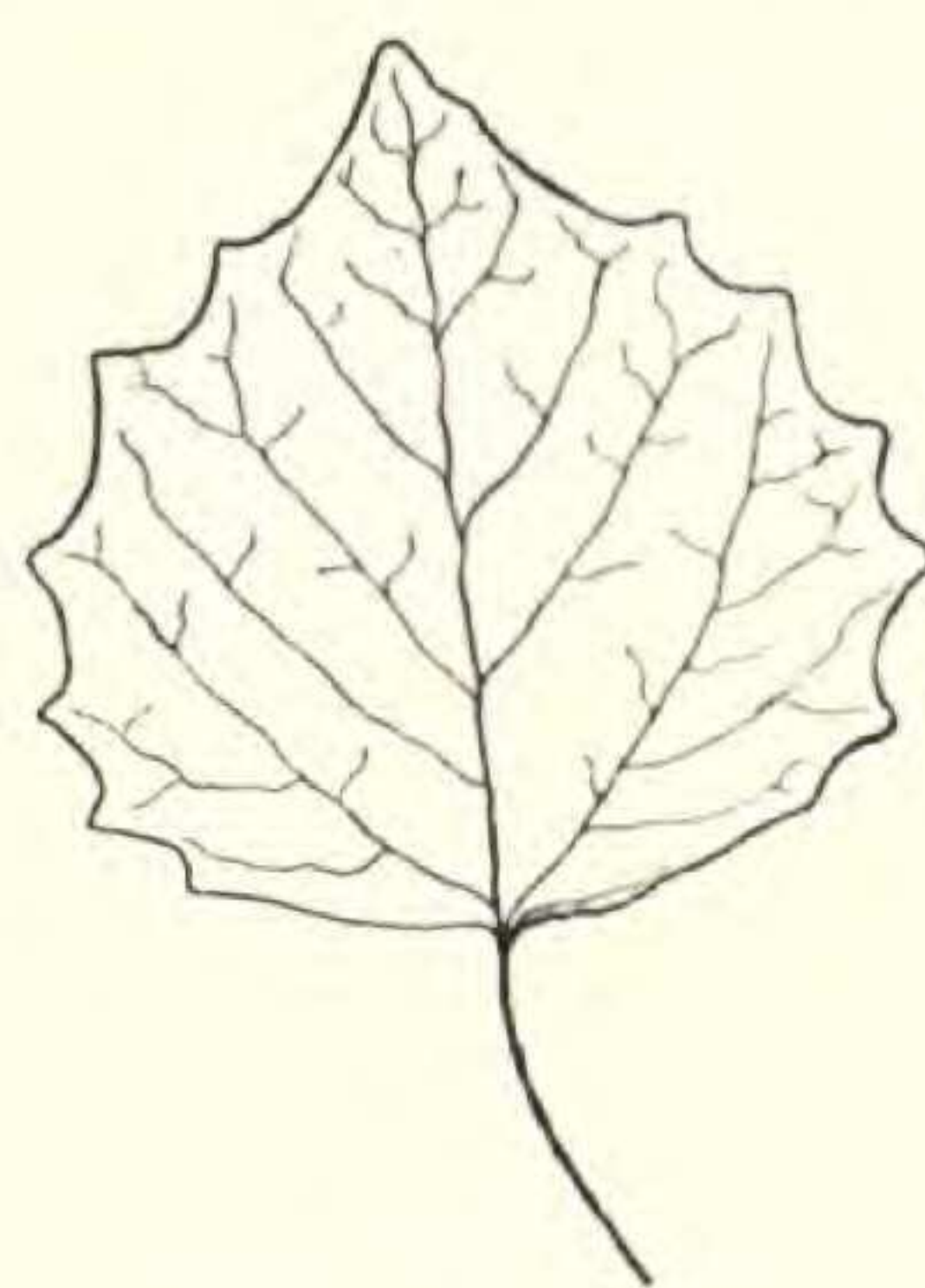


Fig. 1.



Fig. 3.

Fig. 1. *Populus grandidentata* f. *septentrionalis*. $\times \frac{1}{2}$.

Fig. 2. *Populus grandidentata* f. *septentrionalis*. $\times \frac{1}{2}$.

Fig. 3. *Populus grandidentata* f. *meridionalis*. $\times \frac{1}{2}$.

It resembled much *P. tremula* at a distance but proved to be a form of *P. grandidentata*. I was convinced at the time that the latter species has a wide range of variation in the form and size of its leaves. There appear to be three distinct forms of normal leaves — two of which may sometimes occur on the same tree, if not on the same branch.

¹ Willd. Sp. Pl. 4: 803, 1806.

² Muhl. Catalogue 92, 1813.

The illustration given by Michaux Jr. shows a leaf-blade as broad as long. In Maryland another type seems to prevail having an outline recalling the leaf of *Betula nigra*. Dr. E. L. Greene has collected specimens (f. 1) near Springfield, Nova Scotia, which show the first type. The corresponding root-shoot leaf (f. 2) differs from the ordinary root-shoot leaf by its attenuate apex (cf. ff. 2, 4). The leaves of the young growth of our Maryland form are well illustrated in figures 3 and 4, the latter figure representing a leaf with a blade 20 cm. in length.

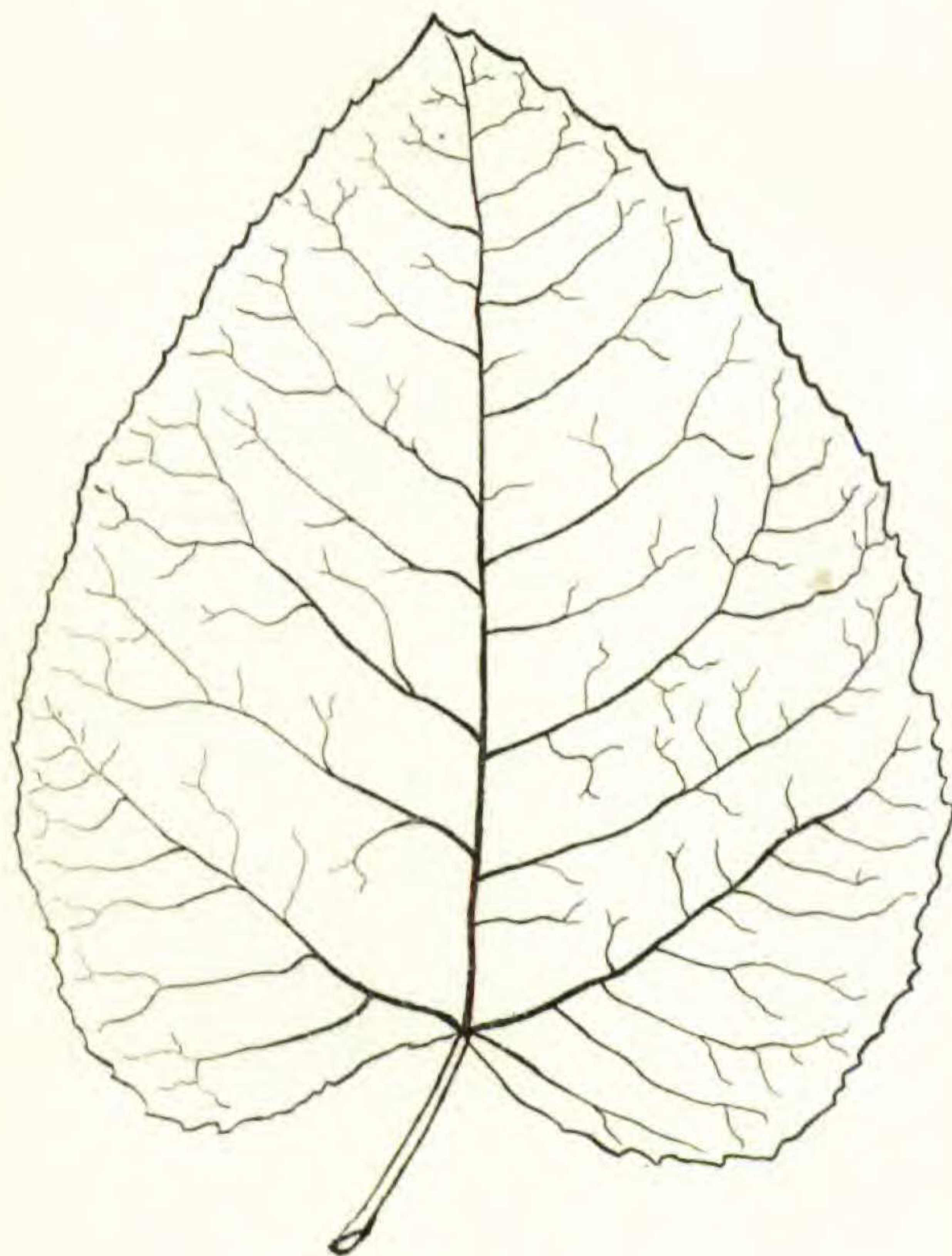


Fig. 4.

Fig. 4. *Populus grandidentata* f. *meridionalis*. $\times \frac{1}{3}$.



Fig. 5.

Fig. 5. *Populus grandidentata* f. *coelestina*. $\times \frac{1}{3}$.

The type of leaf of the poplar found in Garrett County deviates much from that of the others.

The leaves of this form are thinner: their outline commonly subrotund: the apex is not at all prominent, sometimes rounded so as to make the leaf outline elliptical: the margin is repand or remotely repand-dentate, and not prominently repand-dentate or serrate.

The forms may be distinguished thus:

1. *POPULUS GRANDIDENTATA* (ff. 1–5).

α. **septentrionalis** (ff. 1, 2): folia ramorum rotundata paucerepande grandidentata, apice triangulare; surculorum cordata inaequaliter serrata, acuminata, subtus plus minusve tomentosa vel canescentia.

Canada and New England.

β. **meridionalis** (ff. 3–4): folia ramorum elliptica (forma fol. *Betulae nigrae*) repande grandidentata, apice triangulare; surculorum cordata inaequaliter serrata, apice triangulare, repande grandidentata, subtus plus minusve tomentosa vel glabrescentia.

New England and southward.

γ. **coelestina** (f. 5): folia ramorum rotundata vel elliptica, apice triangulari obtuso vel rotundato, margine repando.

Mountains of Maryland. [Tm. 6449.]

POPULUS HETEROPHYLLA. This species is said to be rare. I have observed it eight miles northeast of Pocomoke City, Worcester Co., Maryland, where it grows much scattered among other deciduous trees and *Chamaecyparis thyoides*. The tree is usually tall and straight, the branches and leaves being sometimes inaccessible. My specimens [Tm. 5435] were gathered from root-shoots. Mr. H. H. Bartlett has collected it at Sandy Landing, on the Potomac River some 17 miles west of Washington.

POPULUS TREMULOIDES. This species has been listed for Maryland.¹ It is not, however, recorded from the region immediately south of Pennsylvania in any of our recent manuals.²

No specimens from Maryland have ever come to my notice, nor have I ever seen any trees in places where I might suspect its presence. Supposed specimens from Thayerville, Garrett County, Md., are not of this species. On my recent visit to the latter place as stated above, I found no trace of *Populus tremuloides*, but in its stead *P. grandidentata* f. *coelestina*, which latter has a deceiving "*P. tremula* aspect" from a distance. It should be remembered that Western Maryland is a little explored region botanically and that there are hundreds of square kilometers of forest area as yet unexplored. That we might find it there is not at all unlikely, since other trees and shrubs with which it is usually associated are present in Garrett County. I have observed *Populus tremuloides* on Pocono Plateau, Pa., [Tm.

¹ Plant Life of Maryland, p. 423.

² Sargent, Man. of Trees of N. Am. p. 155, 1905.

Gray's Manual, p. 328, 1908.

Britton & Brown, Ill. Fl. 1: 590, 1913.

6551-53] where it forms dense growths in places. Along with the typical form I observed also *P. tremuloides* β . *Davisiana*¹ [Tm. 6554] hitherto only known from Richmond, Ohio.

Since the publication of this form Prof. C. A. Davis, its discoverer, has collected it at Wenham, Mass. It is readily distinguished by its large, sub-orbicular, 6-9 cm. long leaves and by its equally long, coarse, flattened petioles. Professor Davis has also discovered another very interesting form on Mount Riga, near Salisbury, Conn., for which the following diagnosis is proposed:

POPULUS TREMULOIDES γ **reniformis**.

Differt a forma typica foliis late reniformibus, abrupte apiculatis margine repando serrato.

Type in U. S. Dept. Agr. Economic Herbarium.

Collected on Mount Riga, Conn., June 2, 1912.

This form is readily distinguished by its kidney-shaped leaves, which are ordinarily about 5-6 cm. in length (including the abrupt point) and 7-8 cm. in width.

There is great difference of opinion as to the limitation of *Populus tremuloides*. According to some the concept of the species embraces all the forms from Newfoundland to Mexico and Lower California. Others again regard it as a composite species, some of the constituents of which merit specific or at least varietal rank. The Rocky Mountain form² was segregated from the Eastern upon floral character mainly. The autumn coloring of the leaves differs much in the two forms, the one turning into a golden varying into orange, the other becoming pale lemon yellow.

With the exception of the introduced *Populus dilatata* [*P. italica*] the Lombardy Poplar, nothing is said about our native species of Black Poplars (Cottonwoods) by the Maryland botanists, although ample material exists in the U. S. National Herbarium. The late Professor Ward recorded "*Populus monilifera*" (*P. virginiana*) long since from the Potomac Valley, and the writer has observed it upstream as far as Cumberland, Md.

The writer³ has also treated the two "old" species of black poplars (cottonwoods) which we have in Maryland and Virginia and has separated them on both floral and leaf characters. Since that time

¹ Amer. Midl. Nat. 2: 15, 1911.

² *Populus aurea* Tm. Am. Midl. Nat. 2: 15, ff. 3, 4, 1911.

³ RHODORA 13: 195, 1911.

I have observed the true Carolina poplar "*P. angulata*" in its native region along the Savannah River opposite Augusta, Ga.

Since Michaux, Jr. recorded the species from the Lower Virginia we are justified in discussing it in this paper.

It is difficult to interpret the few lines of description given by Marshall¹ of his "*Populus deltoide*." The description of the leaves might fit any one of the forms now grouped under "*P. deltoides*."



Fig. 6.

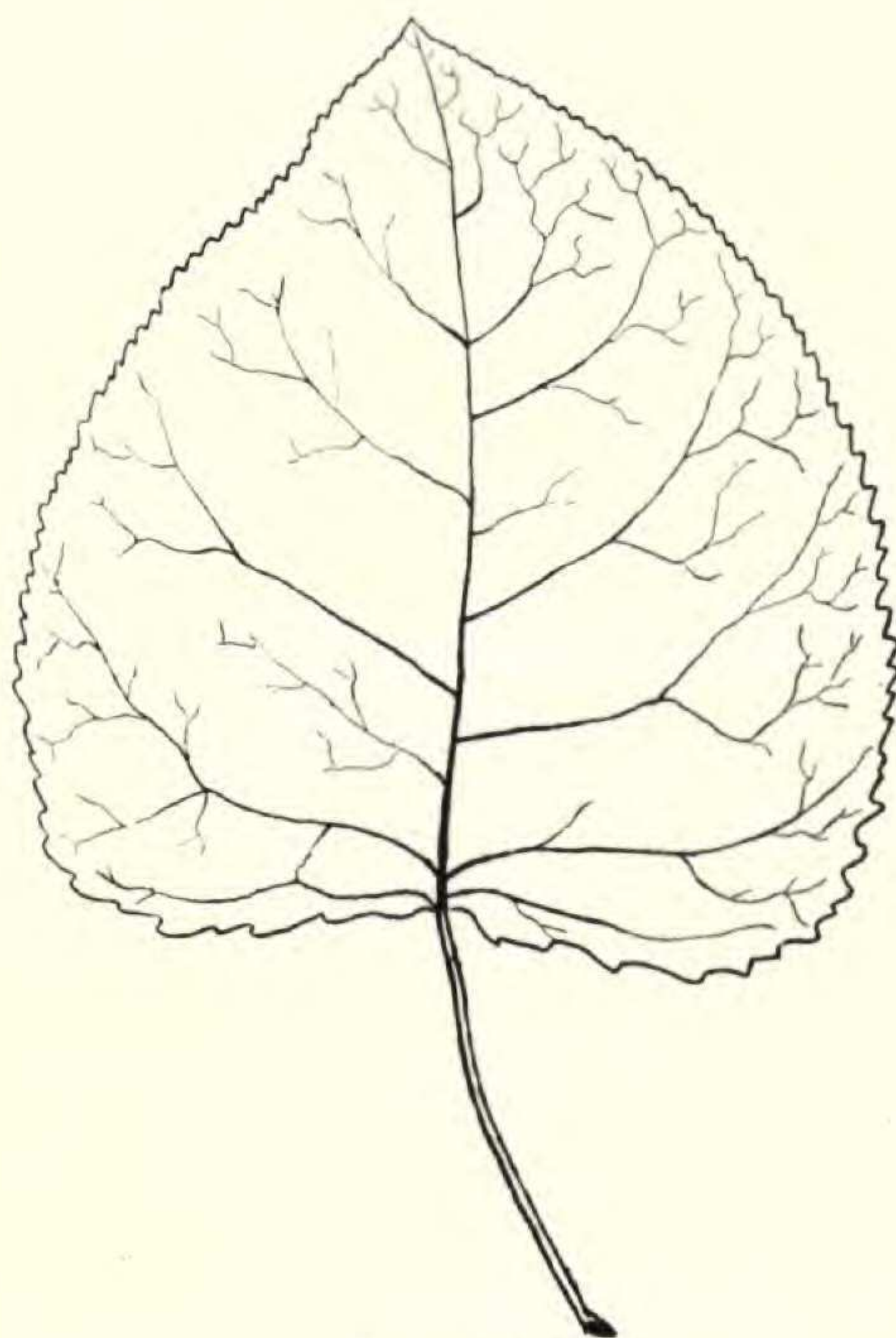


Fig. 7.

Fig. 6. *Populus virginiana*. $\times \frac{1}{2}$.

Fig. 7. *Populus virginiana*. $\times \frac{1}{2}$.

But his statement "It grows naturally upon rich low lands, on the banks of large rivers in Carolina and Florida" would compel us to apply the name to *P. angulata* Ait., if we could be sure of its being the only species of the Aigeiros group in the South. In my own treatment of the black poplars I have applied the name *P. deltoides* to the tree which the Philadelphia botanists of a century or more ago were wont to see in their native region. Marshall (l. c.) mentions also *P. nigra*, the black poplar. His description of this tree would indicate that he had the true *P. nigra* in hand for he states that the leaves of it are "a little downy underneath," a condition which does not exist

¹ *Arbustrum Americanum* (originally from Bartram's Catalogue).

in the "*P. deltoides*" of the Delaware country. The latter is com-

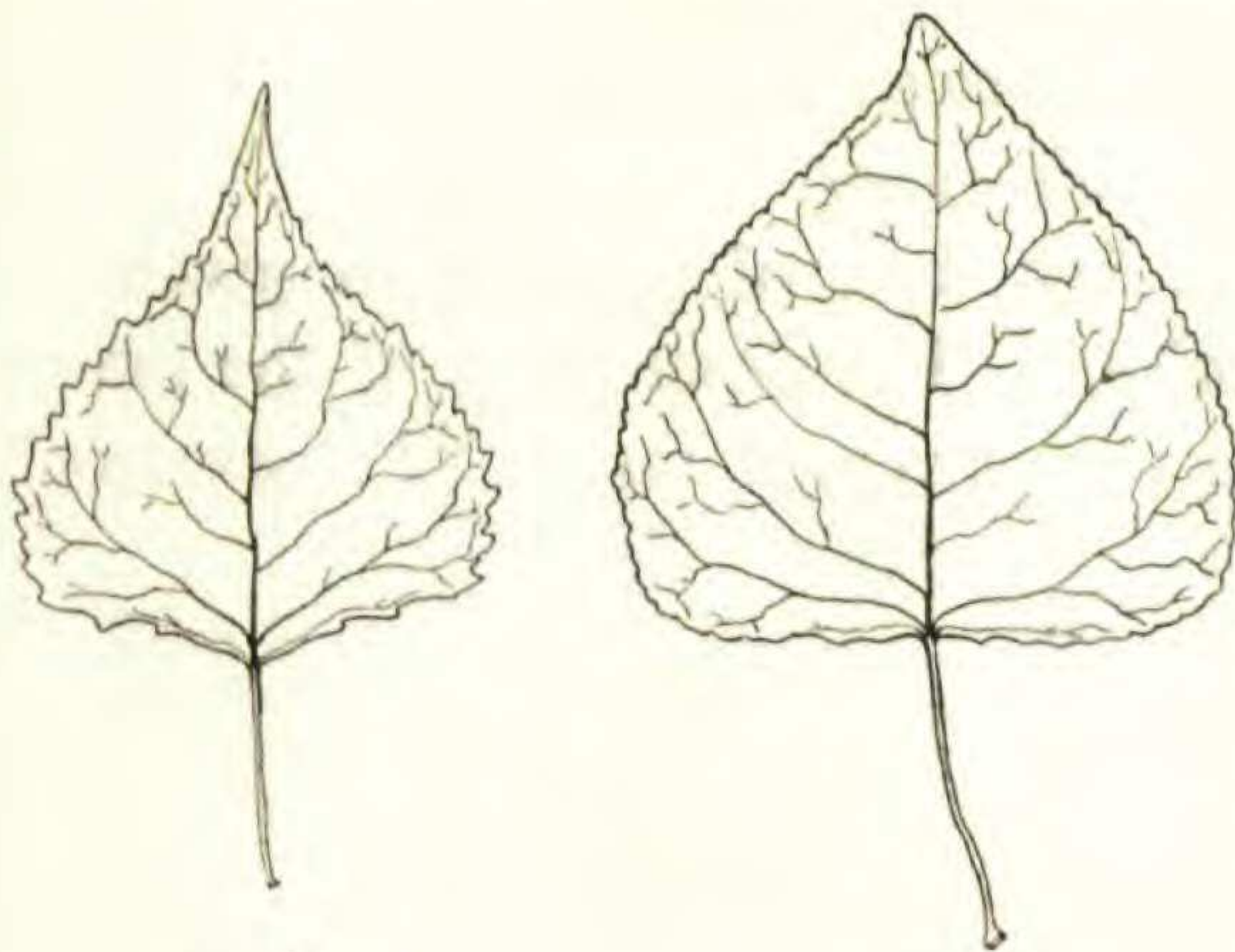


Fig. 8.

Fig. 9.

Fig. 8. *Populus deltoides*. $\times \frac{1}{3}$.

Fig. 9. *Populus deltoides*. $\times \frac{1}{3}$.

monly planted in or about Washington where I have observed it, and its leaves when unfolding are invariably glabrous and shining. Through the courtesy of Prof. B. L. Robinson I have been able to study material of the true *P. nigra* of Europe. Typical leaves of the latter are generally rhombic-acuminate. There is, however, a wide range of variation of the leaves of the two species and

some forms of both are nearly identical in outline. The pubescence, however, even in full grown leaves, serves to distinguish the Old World species from our own.

SYNOPSIS OF THE SPECIES (SECT. AIGEIROS).

Leaves of a cordate type.

POPULUS VIRGINIANA Fouger (ff. 6-7). Normal leaves (excl. petiole) 8-10 cm. long and nearly as broad, ciliolate; the base varying from nearly truncate to cordate (f. 6.): rootshoot leaves larger (f. 7.): stamens 30-50; anthers yellow (reddish at first). Fl. Apr.-May. Along Potomac River.

Leaves of a deltoid or ovate type.

Leaves predominantly deltoid.

POPULUS DELTOIDES Marsh. (ff. 8-10).

Normal leaves (excl. petiole) 8-10 cm. long and nearly as broad (ff. 8 and 10): root shoot leaves larger, 12-15 cm. long and nearly as broad (f. 9): stamens 30-50; anthers dark red. Fl. March-April. Along Delaware River. In cultivation.

Leaves predominantly ovate.

POPULUS ANGULATA Ait. Hort. Kew. **3**: 407.

1789. Michx. f. Hist. Arb. **3**: 302. t. 12, 1813. Schneider, Ill. Handb. **1**: 9. f. 1, 0-p,

1904 (ff. 11-13.) Normal leaves (excl. petiole) 8-10 cm. long, nearly as broad; the base varying from rounded to nearly truncate (f. 12): rootshoot leaves 12-18 cm. long, 12-15 cm. broad; the base rounded: flowers unknown. The young branches are of an olive brown color, 5-winged (See Michx. f., l. c. t. 12.), with scat-



Fig. 10. *Populus deltoides*. $\times \frac{1}{3}$.

tered, oblong, 1 mm. long, white lenticels. There is another type of leaves (f. 13) present on the young growth which I have not observed in the other species. In the latter form the serrations are much finer.

Philip Miller observed as early as in 1759 that the Carolina Poplar was less able to resist cold than the other species of that group. Professor Bessey has also called attention to this fact.

Michaux f. in his description of the tree states: "Le bois du Peuplier de Caroline est blanc et très-tendre; on n'en fait aucun usage dans les pays où il croît. Ce bel arbre a été introduit depuis long-temps en Europe, où les Amateurs de cultures étrangères l'employent avec raison pour l'ornement de leur résidence champêtre: seulement il a un inconvenient, c'est que, dans

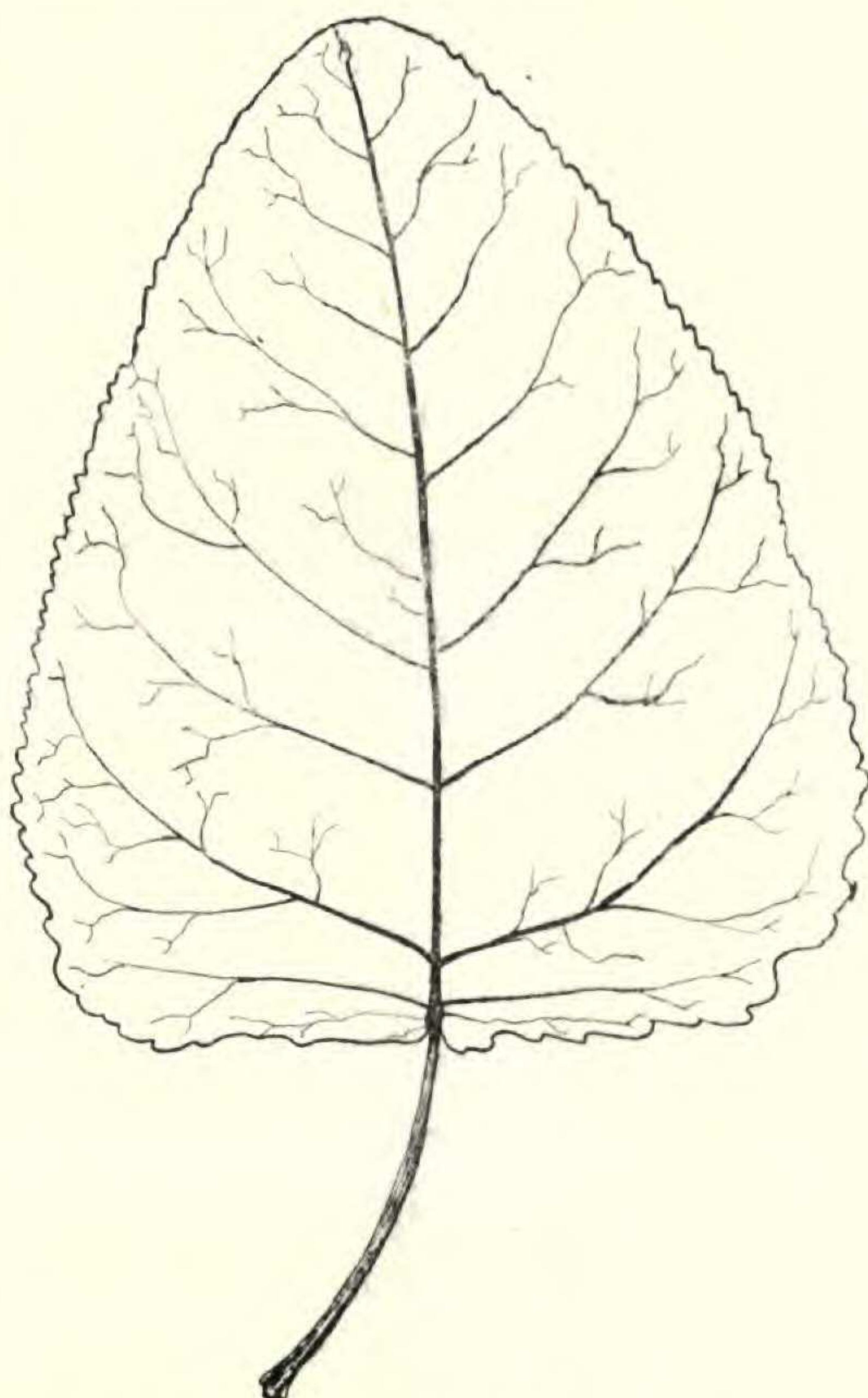


Fig. 11. *Populus angulata*. $\times \frac{1}{4}$.

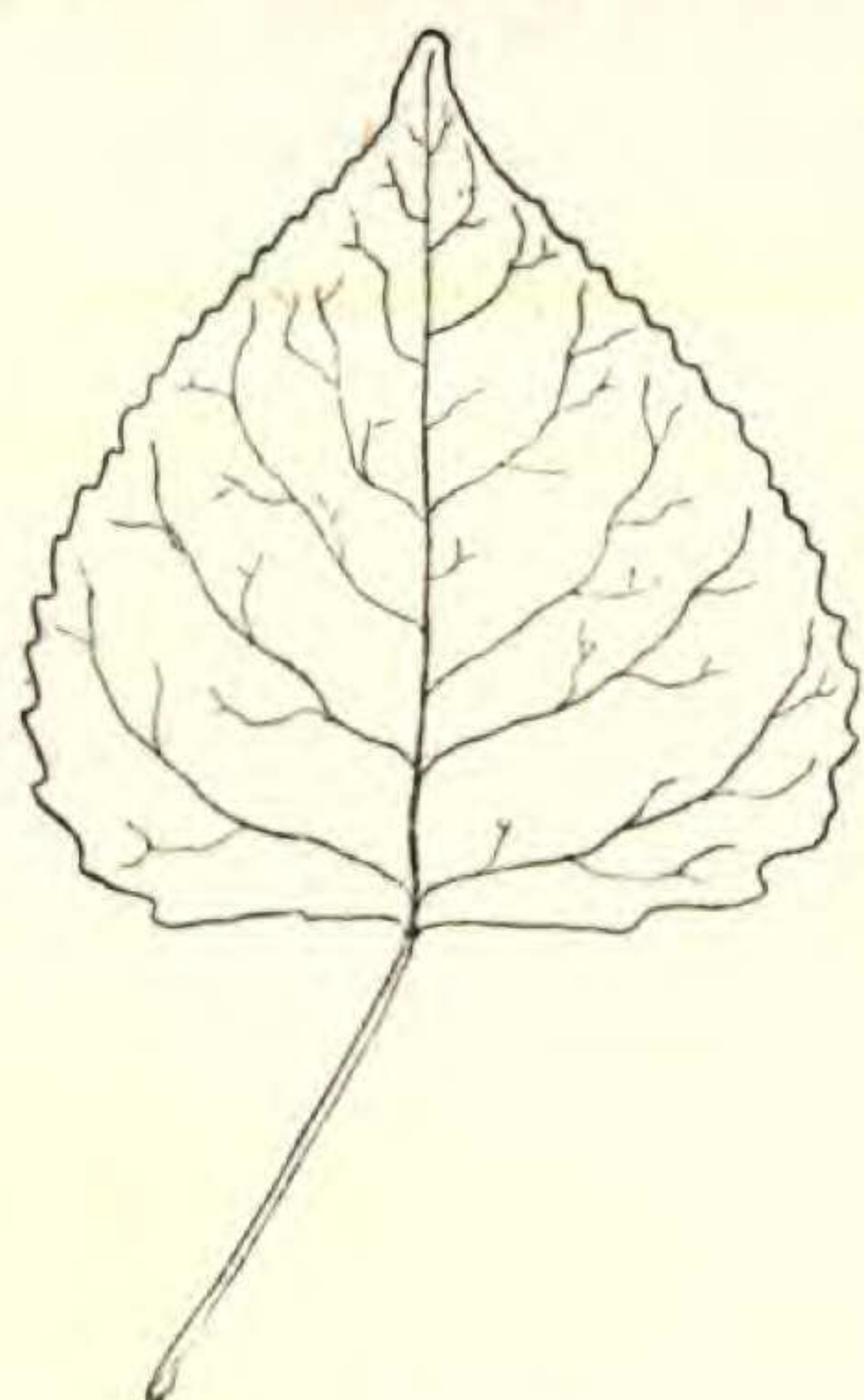


Fig. 12.

Fig. 12. *Populus angulata*. $\times \frac{1}{4}$.

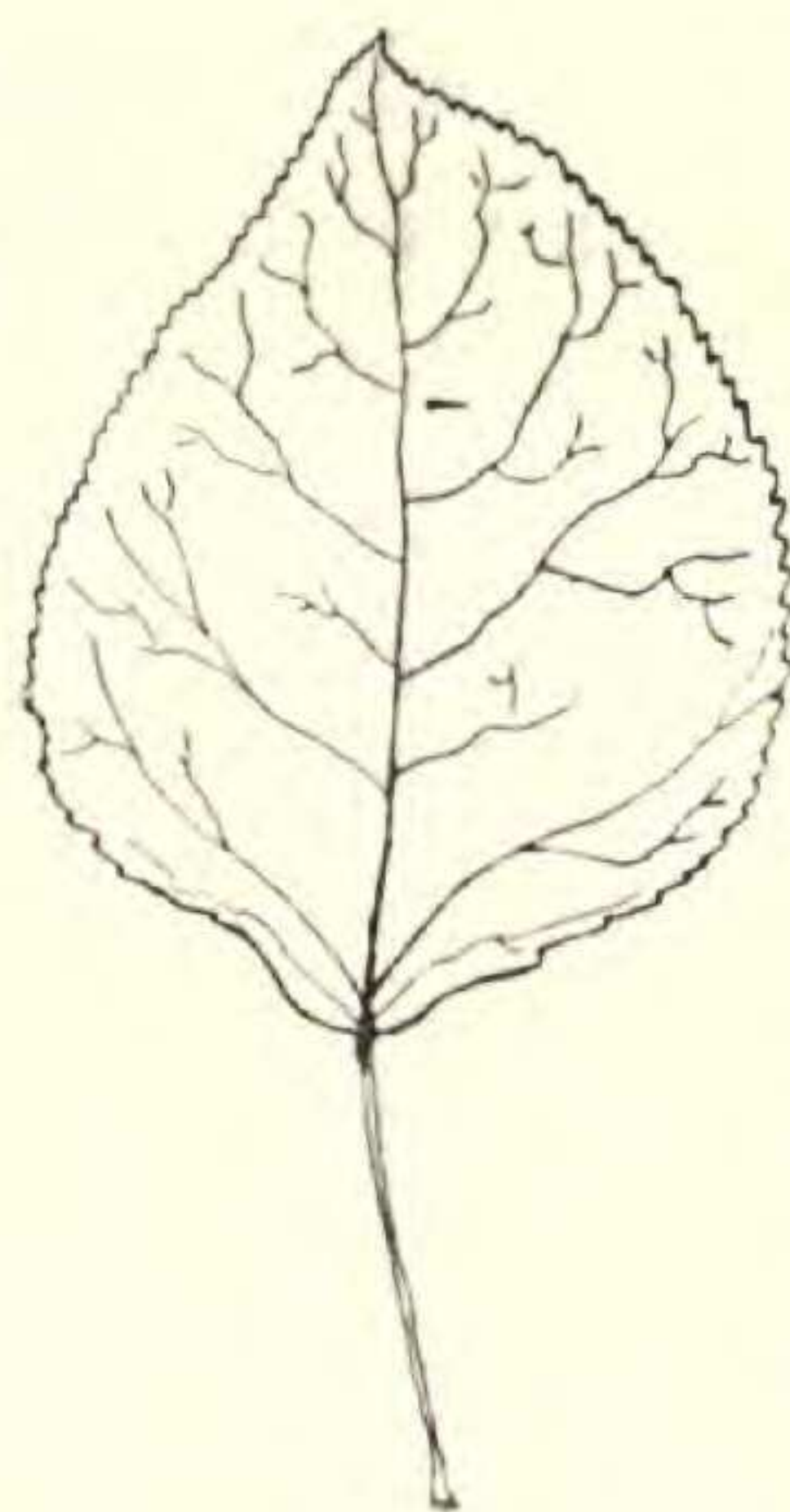


Fig. 13.

Fig. 13. *Populus angulata*. $\times \frac{1}{4}$.

quelques hivers rigoureux, sous le climat de Paris, ses pousses terminales sont attaquées par les gelées." (Michx. f., l. c.) It was my good fortune to observe this handsome tree of our Southland last fall (Sept. 23, 1913). *Populus deltoides* which was planted in the streets had already shed its leaves while the native tree graced the banks of Savannah River in all its glory.

I am indebted to Albert F. Stouffer for the illustrations.

WASHINGTON, D. C.